

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Proposed Threatened Status for *Apios priceana*

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine a plant, *Apios priceana* (Price's potato-bean), to be a threatened species under the authority contained in the Endangered Species Act (Act) of 1973, as amended. *Apios priceana* is currently thought extant at only 13 sites including 4 sites in Mississippi and 3 sites each in Alabama, Kentucky and Tennessee. Approximately 40 percent of its populations have not been relocated in recent years. Only 5 of the extant sites support populations of any significant size (50+ individuals). Many of these populations are declining and are threatened by the adverse modification or loss of habitat through cattle grazing/trampling, clear-cutting and succession. Those sites near roadsides or powerline rights-of-way are potentially threatened by herbicide application. This proposed rule, if made final, will extend the Act's protection to *Apios priceana*. The Service seeks data and comments from the public on this proposed rule.

DATES: Comments from all interested parties must be received by July 11, 1989. Public hearing requests must be received by June 26, 1989.

ADDRESSES: Comments and materials concerning this proposal, and requests for public hearing, should be sent to the Jackson, Mississippi, Field Office, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 316, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Cary Norquist at the above address (601/965-4900 or FTS 490-4900).

SUPPLEMENTARY INFORMATION:**Background**

Apios priceana, a member of the pea family, is a twining perennial vine,

climbing to 5 meters (5.4 yards) from a large, thickened tuber. Leaves are alternate, pinnately compound with typically five to seven leaflets which are ovate lanceolate to broadly ovate in shape. The inflorescence is borne in the leaf axils and consists of racemes or compact panicles, 5-15 centimeters (cm) (1.97-5.91 inches) long. Individual flowers are about 2 cm (0.78 inches) in length and greenish-white tinged with purplish-pink in color. The fruit is a cylindrical legume 13-20 cm (5.12-7.87 inches) in length. Flowering occurs from mid-June through August, with fruits present from late August through September (Kral 1983, Medley 1980, Woods 1988).

This species can be distinguished from *Apios americana*, the only other North American species of *Apios*, on several taxonomic characters. Most notable is the single large tuber of *Apios priceana*, as compared to the multiple small tubers in *Apios americana* (ground-nut). *Apios priceana* typically has larger leaves, more leaflets, and longer fruits. The standard petal (uppermost petal) is more yellow-green than purplish-maroon (as in *Apios americana*), and has a fleshy mucro-like appendage at its tip (Kral 1983, Medley 1980, Woods 1988).

Apios priceana is of potential economic importance as a food crop. Its large single tuber is edible (National Academy of Sciences 1979, Walter *et al.* 1986) and it may have been a food source for Indians and pioneers (Medley 1980), as was the more common *Apios americana* (Yanovsky 1936, National Academy of Sciences 1979, Seabrook and Dionne 1976). Walter (*et al.* 1986) suggests that *Apios priceana* is perhaps most valuable as a source of germ plasm for breeding with other *Apios* species. Such hybridization would increase tuber size and expand land occupied, since *Apios priceana* can grow in highly alkaline, wooded habitats (Walter *et al.* 1986).

This species was first collected by Sadie Price near Bowling Green in Warren County, Kentucky in 1296 and later described by Robinson (1893). *Apios priceana* was transferred to *Glycine priceana* by Britton and Brown in 1913, a transfer which was invalid since *Apios* had already been conserved over *Glycine* (Woods 1988).

Apios priceana is thought to be a native of forest openings (Medley 1980). Populations occur in open woods and along wood edges in limestone areas, often where bluffs grade into creek or river bottoms (Kral 1983, Medley 1980). Several populations reportedly extend onto roadside or powerline rights-of-way. The soils are described as well

drained loams on old alluvium or over limestone (Kral 1983). Habitat is described as mixed hardwoods with such common associates as *Quercus muhlenbergii*, *Lindera benzoin*, *Campanula americana*, *Arundinaria gigantea*, *Tilia americana*, *Fraxinus americana*, *Acer saccharum*, *Ulmus rubra*, *Cercis canadensis*, and *Parthenocissus quinquefolius* (Medley 1980).

Apios priceana has been reported from 21 sites in 5 states; however, approximately 40 percent of these are apparently no longer thought extant. Currently, this species is known to exist at only 13 sites with populations in Alabama, Kentucky, Mississippi, and Tennessee. A summary of the information currently available on the status of *Apios priceana* throughout its range is given below.

Alabama: There are three populations of *Apios priceana* in Alabama. Modest populations (15-30 individuals) occur in Madison County and in Autauga County. The third site, located in Marshall County, supports a poor population (less than five individuals) which was reportedly etiolated due to excessive shading (Medley 1980).

Illinois: *Apios priceana* was discovered in Union County, Illinois, in 1941 (Kurz and Bowles 1981). This population has not been relocated since the 1970s despite extensive searches by many individuals (Kurz and Bowles 1981, Woods 1988). It is possible that this particular population was destroyed by flooding from a beaver dam; however, suitable habitat still exists in the area, so *Apios priceana* could be rediscovered there in the future (J. Schwegmann, Illinois Natural Heritage Inventory, personal communication).

Kentucky: Eight records of *Apios priceana* are reported for Kentucky (Medley 1980); however, only three of these are thought extant today and all of these are declining (R. Athey, botanist, personal communication; Woods 1988). The Livingston County population, which was estimated as having 50-65 plants in 1984, has been severely degraded since cattle were introduced into the area in 1986 (Woods 1988). At the Trigg County and Lyon County sites, plants extend onto a roadside or powerline right-of-way. The number of plants at the Lyon County site is estimated at 25-30 individuals and only a few plants are reported for the Trigg County population (Woods 1988).

Mississippi: This State supports the largest number of populations, with four sites in three counties (Oktibbeha, Clay, Lee). Two moderate-sized populations (50-80 individuals) are known to occur

in Oktibbeha County (W. Morris, Mississippi State University, personal communication; K. Gordon, Mississippi Museum of Natural Science, personal communication). The Clay County site contains a declining population of 15-20 individuals. The largest population in the State is in Lee County, where several hundred plants are estimated to occur over an acre of area.

Tennessee: *Apios priceana* has been reported from five sites in Tennessee (Medley 1980, Woods 1988) but only three of these have been verified as extant in recent years (Woods 1988; P. Somers, Tennessee Ecological Services Division, personal communication). A large, vigorous population of *Apios priceana* occurs in Marion County where hundreds of plants are reportedly scattered on a bluff near a roadside (Woods 1988). A small but vigorous population (20-30 individuals), is located along a creek in Montgomery County (W. Chester, Austin Peay State University, personal communication). The Williamson County population, located near a roadside right-of-way, consists of only two plants (Woods 1988).

In summary, of the 13 known extant sites, only 5 support populations of any significant size (50+ individuals). Three of the sites have only 5 or fewer individuals and the remaining 5 populations have no more than 30 plants. Most populations occur on privately owned land, including one site owned by The Nature Conservancy (Montgomery County, Tennessee). Several populations extend onto State maintained roadside or powerline rights-of-way. Two extant sites occur on lands under Federal jurisdiction, including the Trigg County, Kentucky, site, which is on Tennessee Valley Authority land, and the Autauga County, Alabama, site, which is on U.S. Army Corps of Engineers' land. The historical Illinois site is located on U.S. Forest Service land. *Apios priceana* is currently or potentially jeopardized by a multitude of threats including cattle grazing/trampling, clearcutting, excessive shading/weedy competition due to succession, and adverse right-of-way maintenance practices (herbicide application).

Federal actions involving *Apios priceana* began with Section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the

Service published a notice in the **Federal Register** (40 FR 27823) of its acceptance of the report of the Smithsonian Institution as a petition within the context of Section 4(c)(2), now Section 4(b)(3)(a), of the Act, and of its intention thereby to review the status of those plants. On June 16, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to Section 4 of the Act. *Apios priceana* was included in the Smithsonian petition and the 1976 proposal. General comments received in relation to the 1976 proposal were summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909).

The Endangered Species Act Amendments of 1978 required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. In the December 10, 1979, **Federal Register** (44 FR 70796), the Service published a notice of withdrawal of the June 16, 1976, proposal, along with four other proposals that had expired. *Apios priceana* was included as a category 1 species in a revised list of plants under review for threatened or endangered classification published in the December 15, 1980, **Federal Register** (45 FR 82486). *Apios priceana* was maintained in category 1 in the Service's updated plant notice of September 27, 1985 (50 FR 39526). Category 1 comprises taxa for which the Service presently has sufficient biological information to support their being proposed to be listed as endangered or threatened species.

Section 4(b)(3) of the Endangered Species Act, as amended in 1982, requires the Secretary to make certain findings on pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 Amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Apios priceana* because of the acceptance of the 1975 Smithsonian report as a petition. In October of 1983, 1984, 1985, 1986, and 1987, the Service found that the petitioned listing of *Apios priceana* was warranted, but that listing of this species was precluded due to other higher priority listing actions, and that additional data on vulnerability and threats were still being gathered. Publication of the present proposal constitutes the final 1-year finding that is required.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and

regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be endangered or threatened due to one or more of the five factors described in Section 4(a)(1). These factors and their application to *Apios priceana* Robins (Price's potato-bean) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range

Apios priceana occurs as small disjunct populations throughout its range. As stated in the "Background" section, only 13 of the 21 reported populations are believed extant today. Several populations are threatened by the potential destruction or adverse modification of their habitat. At five sites, plants extend onto or near roadside or powerline rights-of-way and are vulnerable to accidental disturbances. Any future road improvements (expansion) or right-of-way maintenance activities (herbicide treatment) at these sites could adversely impact or destroy populations if proper planning does not occur. One population, located near a roadside in Trigg County, Kentucky, has not been seen since the 1960s (Woods 1988) and may have been destroyed by such activities. The Service will work with those agencies responsible for maintaining these rights-of-way in order to provide these sites with protection. The Madison County, Alabama, site is threatened due to its close proximity to a suburban area (Kral, personal communication). The type locality (Warren County, Kentucky) was also located near a rapidly developing area and may have been destroyed by development (Woods 1988).

Two populations, which are enclosed in pastureland, have been adversely impacted due to soil compaction and trampling by cattle. At the Livingston County, Kentucky, site, 50-60 plants were reported in 1984; however, most of these have been destroyed by cattle which were introduced into the area in 1936 (Woods 1988). The Clay County, Mississippi, population has been similarly impacted.

Apios priceana is so rare that little is known about its response to disturbance (Kral 1983). Apparently, this species can withstand some logging in its habitat, as it has been collected in second growth hardwood forest (Kral 1983). Being a native of forest openings, it is thought that selective logging would probably enhance this species; however, heavy

logging or clearcutting would destroy it (Medley 1980, Kral 1983). R. Athey (personal communication) has observed the reappearance of plants in a site when the canopy was opened by light logging. A historical population from Callaway County, Kentucky (Medley 1980), could not be relocated in an area which had been heavily timbered (Woods 1988). Many of the remaining populations occur in hardwood forests which have a potential of being logged in the near future (Medley 1980). Biologically this species may require specific seral stages or seasonal perturbation (Kentucky Nature Preserves Commission 1982). Further investigation into this aspect of the species' biology is needed in order to perpetuate appropriate habitat conditions.

B. Overutilization for commercial, recreational, scientific, or educational purposes

As discussed under "Background", *Apios priceana* produces a large edible tuber which may have been a food source for Indians and pioneers. It has been suggested that such utilization in the past could have contributed to its decline and present day rarity (Medley, personal communication; Somers, personal communication). *Apios priceana* is currently not a component of the commercial trade in native plants; however, publicity from its listing could generate a demand.

C. Disease and predation

Cattle grazing appears to pose a threat to this species in those areas enclosed in pastureland (Woods, personal communication). However, this is probably secondary to the damage they receive from cattle trampling (see "Factor A" above). *Apios priceana* is not known to be threatened by disease.

D. The inadequacy of existing regulatory mechanisms

Apios priceana is officially listed as endangered in Illinois and Tennessee. Illinois law protects listed species on State property; prohibits the sale of State endangered plants; and prohibits taking without the written permission of the landowner. However, *Apios*

priceana is not currently known to exist in this State. Under Tennessee legislation, taking is prohibited without the permission of the landowner. This State legislation does not provide protection against habitat destruction and has been inadequate in preventing the decline of this species at several sites. The remaining States in this species' range have no official protective legislation (Alabama, Mississippi, Kentucky).

The Nature Conservancy owns and provides protection to the Montgomery County, Tennessee, population (Barnett Woods Natural Area). A second population (Trigg County, Kentucky) on Tennessee Valley Authority land is afforded some protection since it occurs within an area designated as a Conservation Education Center (W. Chester, Austin Peay State University, personal communication). However, no protection is given to those plants at this site which extend onto the roadside right-of-way. Habitat which once supported a population of *Apios priceana* in Illinois is within an area designated as an "Ecological Area" by the U.S. Forest Service and would therefore be protected in the event the species is rediscovered in the area.

The Act would enhance the existing protection, provide Federal protection (see "Available Conservation Measures" below), provide an avenue of protection for plants on private land through voluntary Conservation Agreements, and encourage active management for this species.

E. Other natural or manmade factors affecting its continued existence

Apios priceana is vulnerable due to its limited distribution and low numbers at many sites. Three populations contain no more than five individuals. The extreme rarity of this plant indicates a narrow ecological amplitude (Kral 1983). As discussed in the "Background" section, *Apios priceana* is believed to be a native of forest openings (Medley 1980). Plants under a completely closed canopy do not appear as vigorous, as they are stunted and mostly vegetative (Medley 1980; Athey, personal communication; Woods 1988). Four populations are believed declining due

to a heavy canopy closure and weedy competition associated with natural succession. The loss of many of the historical populations is perhaps attributable to this factor. This species appears to need some sort of disturbance to arrest succession.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining this rule. Based on this evaluation, the preferred action is to list *Apios priceana* as a threatened species. This species is not in imminent danger of extinction. It has a wide geographic range and two populations are in designated preserves. However, a downward trend is clearly indicated for this species (approximately 40 percent of populations not relocated), and it could become endangered in the foreseeable future if protective measures are not taken. Critical habitat is not being designated for reasons discussed in the following section.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for this species at this time. Publication of critical habitat descriptions and maps would increase public interest and possibly lead to additional threats for this species from collecting and vandalism, activities difficult to enforce against (see threats factor "B" above). No benefit can be identified through critical habitat designation that would outweigh these potential threats. All involved agencies and private landowners will be informed of the locations and importance of protecting this species' habitat. Protection of this species' habitat will be addressed through the recovery process and through the section 7 jeopardy standard. Therefore, it would not be prudent to determine critical habitat for this species at this time.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

One extant population occurs on land under jurisdiction of the Tennessee Valley Authority. This site is within an area designated for ecological study and is protected. A second site is on U.S. Army Corps of Engineers land. A historical population from Illinois occurred on U.S. Forest Service land. Suitable habitat still exists in this area so there is possibly that a population could be rediscovered here in the future. However, this area is designated as an ecological preserve (LaRue Hills Ecological Area) and protected accordingly. Currently, no activities to be authorized, funded, or carried out by Federal agencies are known to exist that would affect *Apios priceana*.

The Act and its implementing regulations found at 50 CFR 17.71 and 17.72 set forth a series of general trade prohibitions and exceptions that apply to all threatened plants. All trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.71, would apply. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to import or export *Apios priceana*, transport it in interstate or foreign commerce in the course of a commercial activity, sell or offer it for sale in interstate or foreign commerce, or to remove it and reduce it to possession from areas under Federal jurisdiction. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers. In addition, for listed plants the 1988 Amendments (Pub. L. 100-478) to the Act prohibit their malicious damage or destruction on Federal lands, and their removal, cutting, digging up, or damaging or destroying in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving threatened species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued since the species is not common in cultivation or in the wild. Request for copies of the regulations on plants and inquires regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 27329, Central Station, Washington, DC 20038-7329 (202/343-4955).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of this proposal are hereby solicited. Comments particularly are sought concerning:

- (1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;
- (2) The location of any additional populations of this species and the

reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional information concerning the range and distribution of this species; and

(4) Current or planned activities in the subject area and their possible impacts of this species.

Final promulgation of the regulation on this species will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of the proposal. Such requests must be made in writing and addressed to Field Supervisor (see "ADDRESSES" section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

References Cited

- Kentucky Nature Preserves Commission. 1982. Summary status report on *Apios priceana* in Kentucky. Unpublished. 1 pp.
- Kral, R. 1983. A report on some rare, threatened, or endangered Forest-related vascular plants of the south. USDA, Forest Service, Tech. Pub. R8-1305 pp.
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- Medley, M.E. 1980. Status report on *Apios priceana*. Provided under contract to the U.S. Fish and Wildlife Service, Southeast Region, Atlanta, Georgia. 30 pp.
- National Academy of Sciences. 1979. Tropical Legumes: Resources for the Future. U.S. Government Printing Office, Washington, D.C. pp 41-45.
- Robinson, B.L. 1893. A new species of *Apios* from Kentucky. Bot. Gaz: 450-453.
- Seabrook, J.A., and L.A. Dionne. 1976. Studies in the genus *Apios* I. Chromosome number and distribution of *Apios americana* and *A. priceana*. Can. J. Bot. 54:2567-2572.

Walter, W.M., E.M. Cronm, Jr., G.L. Catignani, and W.C. Thresher. 1986. Compositional Study of *Apios priceana* tubers. Jour. Agr. Food Chem. 34:39-41.

Woods, M. 1988. A revision of *Apios* and *Cochlianthus* (Leguminosae). Ph.D. Dissertation. Southern Illinois University, Carbondale. 153 pp.

Yanovsky, E. 1936. Food plants of the North American Indians. USDA, Washington, D.C. Misc. Pub. No. 237. 84 pp.

Author

The primary author of this proposed rule is Cary Norquist (see "ADDRESSES" section) 601/965-4900 or FTS 490-4900.

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine Mammals, Plants (agriculture).

Proposed Regulation Promulgation

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411; Pub. L. 100-478, 102 Stat. 2306; Pub. L. 100-653, 102 Stat. 3825 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500, unless otherwise noted.

2. It is proposed to amend § 17.12(h) by adding the following, in alphabetical order under Fabaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

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(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Fabaceae—Pea family:						
<i>Apios priceana</i>	Price's potato-bean	U.S.A. (AL, IL, KY, MS, TN)	T		NA	NA

Dated: March 22, 1989.

Susan Recce Lamson,

Acting Secretary for Fish and Wildlife and Parks.

[FR Doc. 89-11428 Filed 5-11-89; 8:45 am]

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